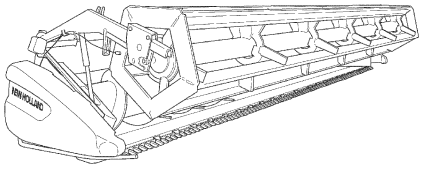


NEW HOLLAND

72C
74C

REPAIR MANUAL

NEW HOLLAND

SERVICE

87017392 2/03

Reprinted

72C, 74C REPAIR MANUAL CONTENTS

The sections used through out all New Holland product Repair manuals may not be used for each product. Each Repair manual will be made up of one or several books.

The sections listed above are the sections utilized for the 72C and 74C Headers.

SECTION 00 - GENERAL INFORMATION

Chapter 1 - General Information

CONTENTS

CALIFORNIA

Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling.

PRECAUTIONARY STATEMENTS

PERSONAL SAFETY

Throughout this manual and on machine decals, you will find precautionary statements ("**DANGER**", "**WARNING**", and "**CAUTION**") followed by specific instructions. These precautions are intended for the personal safety of you and those working with you. Please take the time to read them.

DANGER

This word "DANGER" indicates an immediate hazardous situation that, if not avoided, will result in death or serious injury. The color associated with Danger is RED.

WARNING

This word "WARNING" indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury. The color associated with Warning is ORANGE.

CAUTION

This word "CAUTION" indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. The color associated with Caution is YELLOW.

FAILURE TO FOLLOW THE "DANGER", "WARNING", AND "CAUTION" INSTRUCTIONS MAY RESULT IN SERIOUS BODILY INJURY OR DEATH.

MACHINE SAFETY

The precautionary statement ("**IMPORTANT**") is followed by specific instructions. This statement is intended for machine safety.

IMPORTANT: *The word "IMPORTANT" is used to inform the reader of something he needs to know to prevent minor machine damage if a certain procedure is not followed.*

INFORMATION

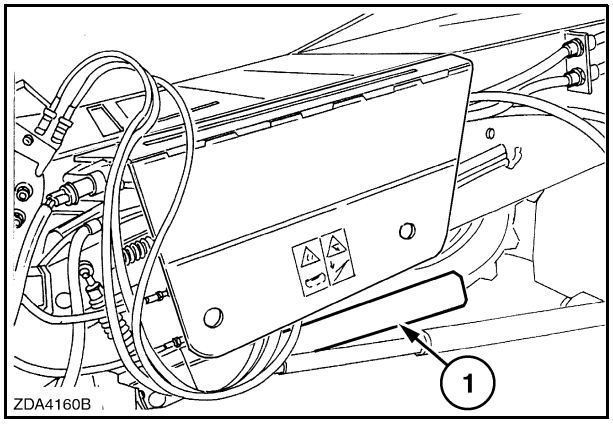
NOTE: *Instructions used to identify and present supplementary information.*

SAFETY PRECAUTIONS

NOTE: On New Holland equipment, left and right are determined by standing behind the unit, looking in the direction of travel.

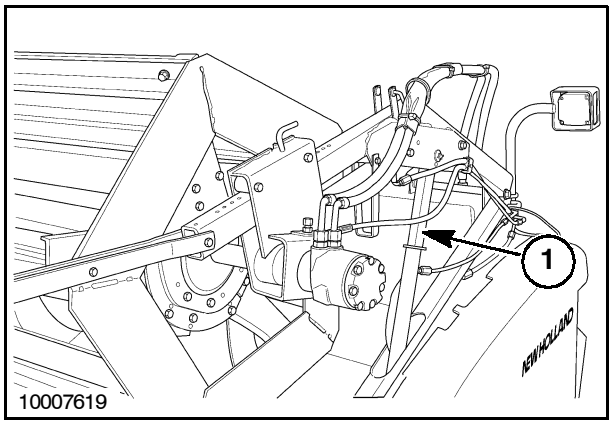
Carefully study these suggestions, and those included in the combine and grain head operator's manuals, and insist they be followed by those working with you and for you.

1. **Thoroughly read and understand this manual and the combine and grain head operator's manuals before attempting to operate this equipment.**
2. **Be sure everyone is clear of the machine before starting.**
3. **Only the operator should be on the combine when operating. Never allow anyone to get on or off the combine while it is in motion.**
4. **Keep all shields in place. Never work around the grain head or combine in loose clothing that could catch on moving objects.**
5. **Observe the following precautions whenever lubricating, making adjustments; or servicing the grain head.**
   - **A. Disengage all clutching switches.**
   - **B. Lower the grain head to the ground or raise the head completely and lower the cylinder safety stop, 1. This stop will prevent the grain head from lowering.**
   - **C. Engage the parking brake.**
   - **D. Shut off the combine engine.**



1

6. **Never disconnect or make any adjustments to the hydraulic system unless the grain head is lowered to the ground or the lock, 1, is in the down position.**
7. **Lower the reel to it's down position or properly engage lift cylinder stop, 1.**



2

DANGER

Failure of the hydraulic lift system may cause the head or reel to fall rapidly. Lift cylinder stops must be used in the lock position when working around the head or reel in a raised position. Failure to use lift cylinder stops may result in serious injury or death.

8. **Practice safety 365 days a year. Keep all your equipment in safe operating condition. Keep all guards and safety devices in place. Always stop the machine before attempting to unplug or service it.**

CAUTION

A careful technician is the best insurance against an accident. Extreme care should be taken to keep hands and clothing away from moving parts.

9. **After servicing the grain head, make sure all tools, parts, and service equipment are removed from the head.**
10. **Do not allow children or bystanders around the machine while it is being adjusted, serviced, or operated.**
11. **Always use a safety stand in conjunction with hydraulic jacks or hoists. Do not rely on the jack or hoist to hold the load completely because they could fail.**
12. **Always use safety glasses when using a hammer, chisel, or other tools that may cause chips to fly off the work.**
13. **Keep work area organized and clean. Wipe up all oil spills to minimize the possibility of a fall. Keep tools and parts off the floor to further reduce the possibility or injury.**
14. **Be sure to reinstall safety devices, guards and shields after adjusting or servicing the grain head.**
15. **When using a gas torch, always wear welding gloves and goggles. Keep a fully charged fire extinguisher within easy reach. Use proper shielding around hydraulic lines.**
16. **Hydraulic fluid escaping under pressure can penetrate skin. Hydraulic fluid may infect a cut. If injured by hydraulic fluid, see a doctor at once.**
17. **To locate a hydraulic leak under pressure, use a small piece of cardboard. Never use your hands to locate a leak.**
18. **Do not attempt to repair or tighten hydraulic hoses under pressure. Cycle all hydraulic circuits to relieve all pressure before disconnecting the lines or before performing other work on the hydraulic system. Make sure all connections are tight and hoses and lines are in good condition before applying pressure to the system.**

MINIMUM HARDWARE TIGHTENING TORQUES

IN FOOT POUNDS (NEWTON-METERS) FOR NORMAL ASSEMBLY APPLICATIONS

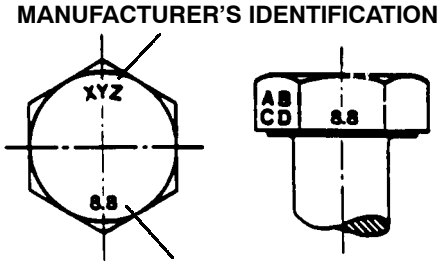
METRIC HARDWARE AND LOCKNUTS

NOMINAL SIZE	CLASS 5.8		CLASS 8.8		CLASS 10.9		LOCKNUT CL.8 W/CL8.8 BOLT
	UNPLATED	PLATED W/ZnCr	UNPLATED	PLATED W/ZnCr	UNPLATED	PLATED W/ZnCr	
M4	15* (1.7)	19* (2.2)	23* (2.6)	30* (3.4)	33* (3.7)	42* (4.8)	16* (1.8)
M6	51* (5.8)	67* (7.6)	79* (8.9)	102* (12)	115* (13)	150* (17)	56* (6.3)
M8	124* (14)	159* (18)	195* (22)	248* (28)	274* (31)	354* (40)	133* (15)
M10	21 (28)	27 (36)	32 (43)	41 (56)	45 (61)	58 (79)	22 (30)
M12	36 (49)	46 (63)	55 (75)	72 (97)	79 (107)	102 (138)	39 (53)
M16	89 (121)	117 (158)	137 (186)	177 (240)	196 (266)	254 (344)	97 (131)
M20	175 (237)	226 (307)	277 (375)	358 (485)	383 (519)	495 (671)	195 (265)
M24	303 (411)	392 (531)	478 (648)	619 (839)	662 (897)	855 (1160)	338 (458)

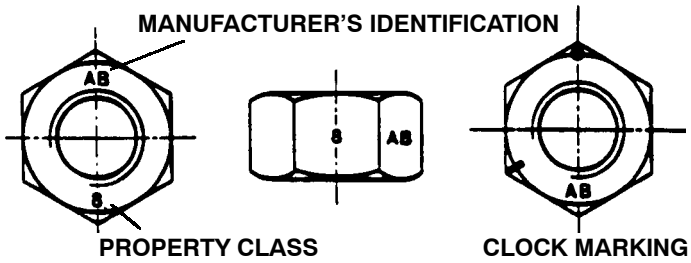
NOTE: Torque values shown with * are inch pounds.

IDENTIFICATION

HEX CAP SCREW AND CARRIAGE BOLTS CLASSES 5.6 AND UP



HEX NUTS AND LOCKNUTS CLASSES 05 AND UP



MINIMUM HARDWARE TIGHTENING TORQUES

IN FOOT POUNDS (NEWTON-METERS) FOR NORMAL ASSEMBLY APPLICATIONS

INCH HARDWARE AND LOCKNUTS

NOMINAL SIZE	SAE GRADE 2		SAE GRADE 5		SAE GRADE 8		LOCKNUTS		NOMINAL SIZE
	UNPLATED or PLATED SILVER	PLATED W/ZnCr GOLD	UNPLATED or PLATED SILVER	PLATED W/ZnCr GOLD	UNPLATED or PLATED SILVER	PLATED W/ZnCr GOLD	GR.B w/GR5 BOLT	GR.C w/GR8 BOLT	
1/4	55* (6.2)	72* (8.1)	86* (9.7)	112* (13)	121* (14)	157* (18)	61* (6.9)	86* (9.8)	1/4
5/16	115* (13)	149* (17)	178* (20)	229* (26)	250* (28)	324* (37)	125* (14)	176* (20)	5/16
3/8	17 (23)	22 (30)	26 (35)	34 (46)	37 (50)	48 (65)	19 (26)	26 (35)	3/8
7/16	27 (37)	35 (47)	42 (57)	54 (73)	59 (80)	77 (104)	30 (41)	42 (57)	7/16
1/2	42 (57)	54 (73)	64 (87)	83 (113)	91 (123)	117 (159)	45 (61)	64 (88)	1/2
9/16	60 (81)	77 (104)	92 (125)	120 (163)	130 (176)	169 (229)	65 (88)	92 (125)	9/16
5/8	83 (112)	107 (145)	128 (174)	165 (224)	180 (244)	233 (316)	90 (122)	127 (172)	5/8
3/4	146 (198)	189 (256)	226 (306)	293 (397)	319 (432)	413 (560)	160 (217)	226 (306)	3/4
7/8	142 (193)	183 (248)	365 (495)	473 (641)	515 (698)	667 (904)	258 (350)	364 (494)	7/8
1	213 (289)	275 (373)	547 (742)	708 (960)	773 (1048)	1000 (1356)	386 (523)	545 (739)	1

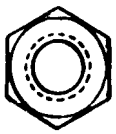
NOTE: Torque values shown with * are inch pounds.

IDENTIFICATION
CAP SCREWS AND CARRIAGE BOLTS

SAE GRADE 2

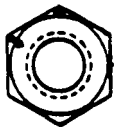
SAE GRADE 5

SAE GRADE 8



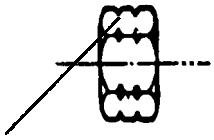
REGULAR NUTS

SAE GRADE 5 HEX NUTS



SAE GRADE 8 HEX NUTS

LOCKNUTS



GRADE IDENTIFICATION

GRADE A NO NOTCHES

GRADE B ONE CIRCUMFERENTIAL NOTCH

GRADE C TWO CIRCUMFERENTIAL NOTCHES

GRADE IDENTIFICATION

GRADE A NO MARKS

GRADE B THREE MARKS

GRADE C SIX MARKS

MARKS NEED NOT BE LOCATED AT CORNERS

GRADE A NO MARK
GRADE B LETTER B
GRADE C LETTER C

GRADE IDENTIFICATION

ECOLOGY AND THE ENVIRONMENT

Soil, air, and water are vital factors of agriculture and life in general. When legislation does not yet rule the treatment of some of the substances which are required by advanced technology, common sense should govern the use and disposal of products of a chemical and petrochemical nature.

The following are recommendations which may be of assistance:

- Become acquainted with and ensure that you understand the relative legislation applicable to your country.
- Where no legislation exists, obtain information from suppliers of oils, filters, batteries, fuels, antifreeze, cleaning agents, etc., with regard to their effect on man and nature and how to safely store, use and dispose of these substances. Agricultural consultants will, in many cases, be able to help you as well.

HELPFUL HINTS

1. Avoid filling tanks using cans or inappropriate pressurized fuel delivery systems which may cause considerable spillage.
2. In general, avoid skin contact with all fuels, oils, acids, solvents, etc. Most of them contain substances which may be harmful to your health.
3. Modern oils contain additives. Do not burn contaminated fuels and or waste oils in ordinary heating systems.
4. Avoid spillage when draining off used engine coolant mixtures, engine, gearbox and hydraulic oils, brake fluids, etc. Do not mix drained brake fluids or fuels with lubricants. Store them safely until they can be disposed of in a proper way to comply with local legislation and available resources.
5. Modern coolant mixtures, i.e. antifreeze and other additives, should be replaced every two years. They should not be allowed to get into the soil but should be collected and disposed of safely.
6. Do not open the air-conditioning system yourself. It contains gases which should not be released into the atmosphere. Your dealer or air conditioning specialist has a special extractor for this purpose and will have to recharge the system properly.
7. Repair any leaks or defects in the engine cooling or hydraulic system immediately.
8. Do not increase the pressure in a pressurized circuit as this may lead to a component failure.
9. Protect hoses during welding as penetrating weld splatter may burn a hole or weaken them, allowing the loss of oils, coolant, etc.

INTERNATIONAL SYMBOLS

As a guide to the operation of your tractor, various universal symbols have been utilized on the instruments, controls, switches, and fuse box. The symbols are shown below with an indication of their meaning.


Thermostart starting aid


Alternator charge


Fuel level


Automatic Fuel shut-off


Engine speed (rev/min x 100)


Hours recorded


Engine oil pressure


Engine coolant temperature


Coolant level


Tractor lights


Headlamp main beam


Headlamp dipped beam


Work lamps


Stop lamps

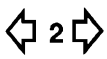

Horn


Radio

KAM Keep alive memory


Turn signals

Turn signals –one trailer



Turn signals –two trailers


Front wind-screen wash/wipe


Rear wind-screen wash/wipe


Heater temp-erature control


Heater fan


Air conditioner


Air filter blocked


Parking brake


Brake fluid level


Trailer brake


Roof beacon


Warning! Corrosive substance


P.T.O.

N Transmission in neutral


Creeper gears


Slow or low setting


Fast or high setting


Ground speed


Differential lock


Rear axle oil tem-perature


Transmission oil pressure


FWD engaged


FWD disengaged

Warning!

Hazard warning lights

Variable control

Pressurized! Open carefully

Position Control

Draft Control

Accessory socket

Implement socket

%age slip

Hitch raise (rear)

Hitch lower (rear)

Hitch height limit (rear)

Hitch height limit (front)

Hitch disabled

Hydraulic and transmission filters

Remote valve extend

Remote valve retract

Remote valve float

Malfunction! See Operator's Manual

Malfunction! (alternative symbol) See Operator's Manual

LUBRICATION

Adequate lubrication and maintenance on a regular schedule is vital to maintaining your equipment. To ensure long service and efficient operation, follow the lubrication and maintenance schedules outlined in this manual. The use of proper fuels, oils, grease and filters, as well as keeping the systems clean, will also extend machine and component life.

IMPORTANT: *Always use genuine* ***New Holland*** *replacement parts, oils and filters to ensure proper operation, filtration of engine and hydraulic systems. See your* ***New Holland*** *dealer for additional oil quantities.*

RECOMMENDED LUBRICANTS AND COOLANTS

Lubricant	Location Used	Type and Description	Part Number	Quart or Liter	Gallon or Tube
Oil	Engine and Pivot Points without Grease Fittings, Chains	SAE 30 API CF-2SJ	9613286	1Qt.	
		SAE 30 API CF-2SJ	9613289		2.5 Gal.
		SAE 30 API CF-2SJ	9613366*	4 L	
		5W-30 API SG/CD	9673589DS	1 Qt.	
		5W-30 API SG/CD	9624590*	4 L	
		10W-30 API SG/CD	9613313	1 Qt.	
		10W-30 API SG/CD	9613314		2.5 Gal.
		10W-30 API SG/CD	9673508DS		5 Gal.
		10W-30 API SG/CD	9613358*	1 L	
		10W-30 API SG/CD	9613359*	4 L	
		15W-40 API CF-4	9613290	1 Qt.	
		15W-40 API CF-4	9673730DS		1 Gal.
		15W-40 API CF-4	9613303		2.5 Gal.
		15W-40 API CF-4	9613292		5 Gal.
		15W-40 API CF-4	9613350*	1 L	
		15W-40 API CF-4	9613351*	4 L	
Coolant	Engine	ESE-M97B18-D, Ethylene Glycol New Holland Spec. Coolant Concentrate	FGCC2701DS		1 Gal.
		Propylene Glycol Concentrate	FGCC2711DS		1 Gal.
Hydraulic Oil	Hydraulic System, Hydrostatic System Front Axle Oil	134D – ESN-M2C134-D New Holland Spec. Hydraulic oil	9624450		2.5 Gal.
		134D – ESN-M2C134-D	9624451		5 Gal.
		134D – ESN-M2C134-D	9613367*	4 L	
		134D – ESN-M2C134-D	9624785*	10 L	
Hydraulic Oil	Optional, Multi-Seasonal Use, Recommended for both Low and High Temperature extremes.	F200	86523625DS	1 Qt.	
		F200	86523626DS		5 Gal.
		F200	86509446*	20 L	
Gear Oil	Gearboxes	80W90 EP Gear Oil API GL5	9613295	1 Qt.	
		80W90 EP Gear Oil API GL5	9613294		2.5 Gal.
		80W90 EP Gear Oil API GL5	9613375*	5 L	
		85W140 EP Gear Oil API GL5	9613297	1 Qt.	
		85W140 EP Gear Oil API GL5	9613296		2.5 Gal.
		85W140 EP Gear Oil API GL5	9613376*	4 L	
Grease	All Grease Fittings	Lithium base EP high temperature	9861804DS		Tube
		Lithium base EP high temperature	9861804CDS*		Tube
Brake Fluid		Mineral Based Oil	1QM6C34A or 86541699DS	1 Qt.	

**** NOTE:*** *Canada Part Numbers ONLY.*

SECTION 00 - GENERAL INFORMATION

Chapter 2 - Specifications

CONTENTS

SPECIFICATIONS
72C

	Head Size 6.0 m (20′)	7.6 m (25′)	9.2 m (30′)
Combine Model Used	All CR All CX	All CR All CX	All CR All CX
Dimensions			
Width-overall (single knife drive)	6.59 m (21′6″)	NA	NA
Width-overall (double knife drive)	NA	8.07 m (26′6″)	9.59 m (31′6″)
Width-crop gathering	6.0 m (20′)	7.6 m (25′)	9.2 m (30′)
Width-crop cutting	5.95 m (19′6″)	7.47 m (24′6″)	8.99 m (29′6″)
Length-without dividers	1.39 m (4′6-5/8″)	1.39 m (4′6-5/8″)	1.39 m (4′6-5/8″)
Length-with dividers	2.64 m (8′8″)	2.64 m (8′8″)	2.64 m (8′8″)
Height (Less reel)	1.2 m (4′)	1.2 m (4′)	1.2 m (4′)
Cutting height with head on ground	25 mm (1″)	25 mm (1″)	25 mm (1″)
Minimum (below ground)	406 mm (16″)	406 mm (16″)	406 mm (16″)
Maximum	1270 mm (50″)	1270 mm (50″)	1270 mm (50″)
Weight without reel			
Approximate	1161 kg (2560 lbs.)	1529 kg (3370 lbs.)	1762 kg (3885 lbs.)
Knife drive			
Number of drives	Single	Double	Double
Belt type	V-belt	V-belt	V-belt
Drive mechanism	wobble box-sealed in oil bath		

	72C Head Size		
	6.0 m (20′)	**7.6 m (25′)**	**9.2 m (30′)**
Combine Model Used	All CR All CX	All CR All CX	All CR All CX
Knife speed	510 CPM (1020 spm)	510 CPM (left side) (1020 spm) 525 CPM (right side) (1050 spm)	510 CPM (left side) (1020 spm) 525 CPM (right side) (1050 spm)
Cutter bar			
Knife sections (bolted)	overserrated		
Knife guards	forged steel - heat treated		
Knife stroke	76 mm (3″)	76 mm (3″)	76 mm (3″)
Cross Auger			
Standard speed	158 RPM	158 RPM	158 RPM
Optional speed	139 RPM	139 RPM	139 RPM
Outside diameter	660 mm (26″)	660 mm (26″)	660 mm (26″)
Flighting pitch	610 mm (24″)	610 mm (24″)	610 mm (24″)
Flighting width	127 mm (5″)	127 mm (5″)	127 mm (5″)
Number of auger fingers (Full length)	28	30	32
Finger diameter	16 mm (0.626″)	16 mm (0.626″)	16 mm (0.626″)
Reach beyond center tube	173 mm (6-13/16″)	173 mm (6-13/16″)	173 mm (6-13/16″)
Auger adjustments	4 directions	4 directions	4 directions
Auger mounting	free to float vertically	free to float vertically	free to float vertically

	72C Head Size		
	6.0 m (20′)	**7.6 m (25′)**	**9.2 m (30′)**
Combine Model Used	All CR All CX	All CR All CX	All CR All CX
Reel			
Bat reel			
Number of bats	5 steel bats	5 steel bats	5 steel bats
Bat width	178 mm (7″)	178 mm (7″)	178 mm (7″)
Diameter	1016 mm (40″)	1016 mm (40″)	1016 mm (40″)
Pickup reel			
Number of bats	6 plastic bats	6 plastic bats	6 plastic bats
Fingers (cammed)	plastic (std.) steel (opt.)	plastic (std.) steel (opt.)	plastic (std.) steel (opt.)
Diameter	1067 mm (42″)	1067 mm (42″)	1067 mm (42″)
Standard speed range	5 RPM to 61 RPM	5 RPM to 61 RPM	5 RPM to 61 RPM
Height adjustment	mech. - drawbolts	mech. - drawbolts	mech. - drawbolts
Lifting means	hydraulic cylinders	hydraulic cylinders	hydraulic cylinders
Fore and aft adjustment Hydraulic Std.	hyd. retention	hyd. retention	hyd. retention
Weight-bat reel approximate	136 kg (300 lbs.)	164 kg (360 lbs.)	170 kg (375 lbs.)
Weight-pick-up reel approximate	245 kg (540 lbs.)	304 kg (670 lbs.)	344 kg (756 lbs.)
Reel Speed Drive	Hydraulic motor	Hydraulic motor	Hydraulic motor

SPECIFICATIONS
74C

	Head Size 6.1 m (20′)	7.6 m (25′)	9.2 m (30′)
Combine Model Used	All CR All CX	All CR All CX	All CR All CX
Dimensions			
Width-overall (single knife drive)	NA	NA	NA
Width-overall (double knife drive)	6.59 m (21′6″)	8.07 m (26′6″)	9.59 m (31′6″)
Width-crop gathering	6.10 m ((20′)	7.60 m (25′)	9.14 m (30′)
Width-crop cutting	5.95 m (19′6″)	7.47 m (24′6″)	8.99 m (29′6″)
Length-without dividers	2.03 m (6′8″)	2.03 m (6′8″)	2.03 m (6′8″)
Length-with short dividers	2.77 m (9′1″)	2.77 m (9′1″)	2.77 m (9′1″)
Length-with long dividers	3.39 m (11′2″)	3.39 m (11′2″)	3.39 m (11′2″)
Height (Less Reel)	1.28 m (4′3″)	1.28 m (4′3″)	1.28 m (4′3″)
Cutting height With head on ground	32 mm (1-1/4″)	32 mm (1-1/4″)	32 mm (1-1/4″)
Minimum (below ground)	406 mm (16″)	406 mm (16″)	406 mm (16″)
Maximum	1270 mm (50″)	1270 mm (50″)	1270 mm (50″)
Weight without reel (Includes Terrain Tracer) Approximate	20′ 1380 kg (3035 lbs.)	25′ 1659 kg (3658 lbs.)	30′ 2105 kg (4630 lbs.)
Knife drive			
Number of drives	Double	Double	Double
Belt type	V-belt	V-belt	V-belt
Drive mechanism	wobble box-sealed in oil bath		

	74C Head Size		
	6.1 m (20′)	**7.6 m (25′)**	**9.2 m (30′)**
Combine Model Used	All CR All CX	All CR All CX	All CR All CX
Knife speed	510 CPM (left side) (1020 spm) 525 CPM (right side) (1050 spm)	510 CPM (left side) (1020 spm) 525 CPM (right side) (1050 spm)	510 CPM (left side) (1020 spm) 525 CPM (right side) (1050 spm)
Cutter bar			
Flexible cutter bar style	integral to header frame		
Flexible cutter bar vertical float range	114 mm (4-1/2″)	114 mm (4-1/2″)	114 mm (4-1/2″)
Knife sections (bolted)	easy bolt 1-1/2″ - overserrated *		
Knife guards	forged steel - heat treated		
Knife stroke	76 mm (3″)	76 mm (3″)	76 mm (3″)
Cross Auger			
Standard speed	158 RPM	158 RPM	158 RPM
Slow speed	139 RPM	139 RPM	139 RPM
Outside diameter	660 mm (26″)	660 mm (26″)	660 mm (26″)
Flighting pitch	660 mm (26″)	660 mm (26″)	660 mm (26″)
Flighting width	127 mm (5″)	127 mm (5″)	127 mm (5″)
Number of auger fingers (Full Length)	28	30	32
Finger diameter	16 mm (0.625″)	16 mm (0.625″)	16 mm (0.625″)
Reach beyond center tube	173 mm (6-13/16″)	173 mm (6-13/16″)	173 mm (6-13/16″)
Auger adjustments	4 directions	4 directions	4 directions
Auger mounting	free to float vertically	free to float vertically	free to float vertically

* 3″ knife and guards optional on 20′, 25′, and 30′.

	74C Head Size		
	6.1 m (20′)	**7.6 m (25′)**	**9.2 m (30′)**
Combine Model Used	All CR All CX	All CR All CX	All CR All CX
Reel			
Pickup reel			
Number of bats	6 bats	6 bats	6 bats
Fingers (cammed)	plastic (std.) steel (opt.)	plastic (std.) steel (opt.)	plastic (std.) steel (opt.)
Diameter	1067 mm (42″)	1067 mm (42″)	1067 mm (42″)
Standard speed range	5 RPM to 61 RPM	5 RPM to 61 RPM	5 RPM to 61 RPM
Cutter bar to reel clearance adjustment	mech. - drawbolts	mech. - drawbolts	mech. - drawbolts
Reel height adjustment	hydraulic cylinders	hydraulic cylinders	hydraulic cylinders
Fore and aft adjustment (Hyd Standard)	hydraulic cylinders	hydraulic cylinders	hydraulic cylinders
Pick-up reel weight approximate	245 kg (540 lbs.)	304 kg (670 lbs.)	344 kg (756 lbs.)
Reel Speed Drive	Hydraulic motor	Hydraulic motor	Hydraulic motor
Automatic Height Control	Standard	Standard	Standard
Lateral Float	Automatic standard	Automatic standard	Automatic standard

SECTION 00 - GENERAL INFORMATION

Chapter 3 - Troubleshooting

CONTENTS

TROUBLESHOOTING
GENERAL

PROBLEM	POSSIBLE CAUSE	CORRECTION
Grain loss ahead of cutter bar.	Reel speed not coordinated with ground speed.	Adjust the reel speed so the reel is traveling slightly faster than ground speed.
	Reel not being operated at correct height.	Normally the reel should be adjusted so it contacts approximately 1/3 of the top portion of the head and stem.
	Ground speed too fast for crop conditions.	Slow down until crop is fed smoothly into the reel and cutter bar.
	Low-growing or down crops not cut.	Lower the head.
	Head too high.	Lower the head so the stems will be cut long enough for a smooth feed into the auger.
	Knife sections dull or broken	Sharpen or replace sections.
	Guards worn.	Replace guards.
	Knife hold-down clips misaligned.	Shim the hold-down clips for 0.1 mm - 0.5 mm (0.005 - 0.020″) clearance to sickle.
Cut crop builds up and falls in front of the cutter bar.	Reel not adjusted low enough for proper delivery of cut material.	Set reel low enough to sweep material from the cutter bar to the auger.
	Reel adjusted too far forward.	Move the reel back so the crop is delivered to the auger smoothly.
	Clearance is too great from platform to auger bottom.	For normal operations, the auger flights should be approximately 9.5 mm (3/8″) from the floor. In extra-heavy crops, this distance should be increased slightly. In very light crops, it may be necessary to decrease the distance.
	Cutting platform too high resulting in very short stems on heads.	Lower the head so more straw moves through the machine.
	Reel speed too slow.	Increase reel speed.
	Short, light crop.	Install optional reel flap bundle.
		Increase ground speed.

PROBLEM	POSSIBLE CAUSE	CORRECTION
Green material accumulating on rigid cutter bar and poor transfer to auger.	Reel too high.	Lower reel closer to cutter bar.
Poor cutting action (ragged and uneven).	Cutter bar not operating at proper speed.	Check combine main shaft RPM. See combine operator's manual for proper settings. Check belt tensions.
		Speed up variable speed feeder.
	Knife sections, hold-down clips or guards worn, damaged or broken.	Replace all worn, damaged or broken parts.
	Bent knife causing binding.	Straighten knife and check guard alignment. Align if necessary.
	Hold-down clips not adjusted properly.	Adjust hold-down clips so the knife works freely but knife sections do not lift off the guards.
	Ground speed too fast for condition of crop.	Slow down ground speed.
	Knife belt drive slipping.	Adjust V-belt tension.
	Cutter bar plugging with material.	Clean out obstruction and adjust reel to sweep material from the cutter bar.
	Worn knife head bushing.	Replace knife head bushing.
Excessive vibration of cutter bar and related parts	Cutting mechanism not at recommended speed.	Check combine main shaft RPM. See combine operator's manual for proper settings. Make sure all belts are properly tightened.
	Loose knife-to-knife arm connection.	Tighten as recommended.
	Worn knife head bushing.	Replace knife head bushing.
	Incorrect knife register.	Check for alignment of timing marks on wobble box and knife arm.
	Loose or worn bearings in wobble box.	Check and replace parts if required.
	Dull knives and guards.	Sharpen knives. Replace guards as required.
	Bent cutter bar or knife back.	Straighten so knife moves freely.
	Bent guards.	Check guard alignment.

PROBLEM	POSSIBLE CAUSE	CORRECTION
Reel wrapping or carrying straw around.	Reel speed too fast.	Reduce reel speed so material will fall onto the cutting platform. Reel speed should be slightly faster than ground speed.
	Reel height incorrect.	Adjust reel so the bats contact approximately 1/3 of the top portion of the stem and heads.
	Too much pitch on pickup tines.	Reduce pitch of tines.
	Pickup reel ends unprotected.	Install reel end shields.Install long crop dividers.
	Reel set back too far.	Move reel forward.
Difficulty harvesting down or tangled crops.	Necessary to take too much material into combine to get all the grain.	Reduce ground speed.
	Must cut too low to get all the crop.	Use aftermarket crop lifters or pickup reel in down and tangled crop conditions.
	Incorrect reel location.	Adjust reel ahead and down to lift crop.
Poor material flow to auger.	Pickup fingers are pitched too much.	Reduce pitch of fingers.
	Paint or rust on head floor.	Remove paint or rust.
	Reel too far forward or rearward.	Adjust reel position to create smooth crop flow.
Green or matted material hangs on knife guard tips.	Improper guards.	Replace regular guards with stub guards.
Crop not feeding evenly to center of cutting platform.	Material builds up and hesitates on cutter bar. Enters auger in bunches.	Lower reel and move it rearward so crop is swept evenly into the auger.
	Retractable fingers do not feed material into feeder properly.	Adjust auger height and retractable fingers.
	Auger slow-speed sprocket being used.	Change sprocket to standard speed.
	Auger set too high.	Adjust auger to reduce clearance with floor. Check flighting clearance after adjusting auger height.
	Feeder strippers lower than head strippers.	Raise feeder strippers to eliminate restriction of crop.
Crop not feeding evenly to the feeder chain	Auger too far forward.	Move auger back.
	Short, light crop.	Move auger back as far as possible.
		Move feeder front drum forward (add links if necessary).

SECTION 35 - HYDRAULIC SYSTEM

Chapter 1 - Hydraulic System

CONTENTS

WARNING

Hydraulic fluid escaping under pressure can penetrate skin. Hydraulic fluid may infect a cut. If injured by hydraulic fluid, see a doctor at once.

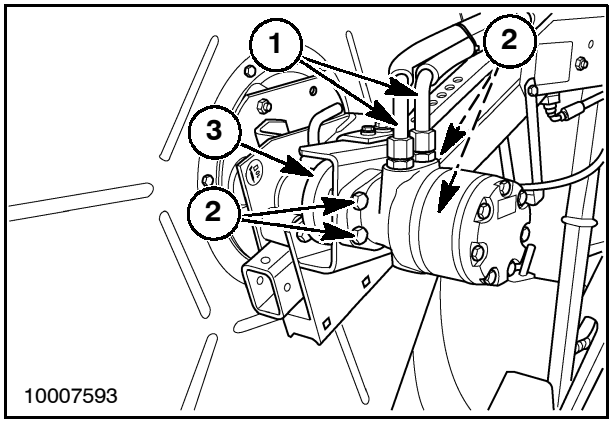
Do not attempt to repair or tighten hydraulic hoses under pressure. Cycle all hydraulic circuits to relieve all pressure before disconnecting the lines or before performing other work on the hydraulic system. Make sure all connections are tight and hoses and lines are in good condition before applying pressure to the system.

REEL HYDRAULIC DRIVE

The reel is hydraulically driven. Fluid under pressure is supplied from the combine to drive the motor and reel. A “break away” type of mount connects the motor to the frame. If the reel should become jammed during operation, a special bolt in the mount will shear and allow the motor to swing away. The outer coupling will disengage from the inner half, and force will no longer be applied to the reel.

Hydraulic Motor Removal

1. Label and disconnect the hydraulic lines, 1. Cap the lines to prevent entry of foreign material.
2. Remove the four mounting cap screws, 2, lock washers, and nuts. Pull the motor from the reel assembly. The motor will slide from the outer coupling half, 3.



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Hydraulic Motor Installation

1. Set the outer coupling half, 3, onto the inner coupling. Engage the shaft spline with the outer coupling half. Secure the motor to the mount using four cap screws, 2, lock washers, and nuts.
2. Attach the hydraulic lines, 1, to their original ports.

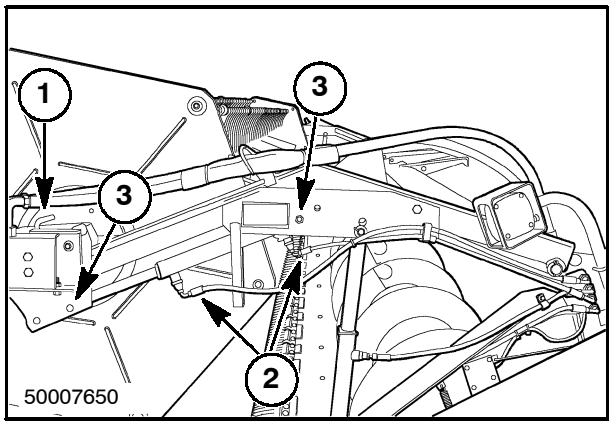
REEL FORE/AFT CYLINDERS

The reel lift system consists of two cylinders. These cylinders act together. When extending the cylinders to move the reel forward, the right cylinder acts as the master and the left cylinder acts as the slave. Retracting the cylinders to move the reel aft, the left cylinder acts as the master and the right cylinder acts as the slave.

The cylinders are different sizes. The left has a larger diameter than the right. Repair procedures are similar for both cylinders. Ensure, however, to have the correct seal kit. Seal kits are not interchangeable.

Cylinder Removal

1. Raise the reel and engage the cylinder locks, or lower it completely. Disconnect head hydraulics from the combine.
2. Verify that the reel fore/aft position is held securely in place with the locking pins, 1.
3. Disconnect the hydraulic lines, 2. Install plugs into the ends of the hydraulic lines to prevent entry of foreign material.
4. Remove the clevis bolts, 3, from the barrel and rod ends of the cylinder.



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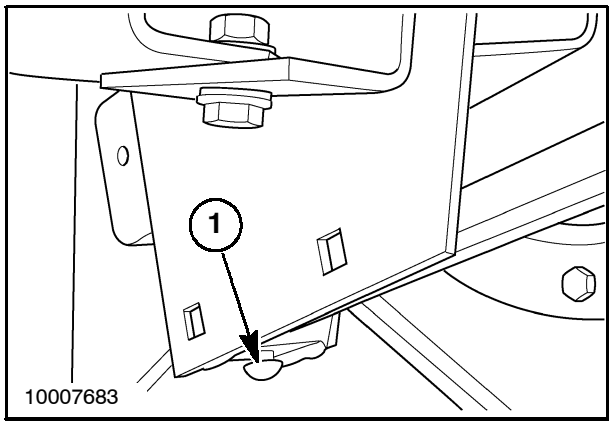
NOTE: *On rigid grain heads, the fore/aft cylinders are connected to the reel with a round pin, 1.*



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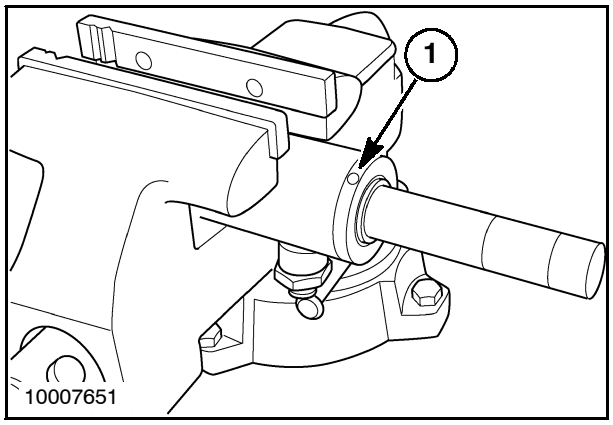
Cylinder Disassembly

1. Secure the cylinder in a holding device.
2. Using a pin spanner, or punch and hammer at 1, rotate the cylinder gland counterclockwise to disengage it from the barrel.



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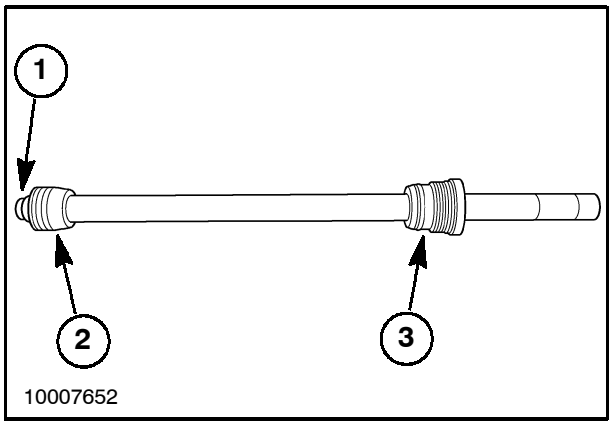
3. Pull the piston rod assembly from the barrel. Remove the cap screw, 1, from the piston end of the rod and capture the flat washer.
4. Slide the piston, 2, and gland, 3, from the rod.
5. Remove all O rings and seals from the piston and gland.



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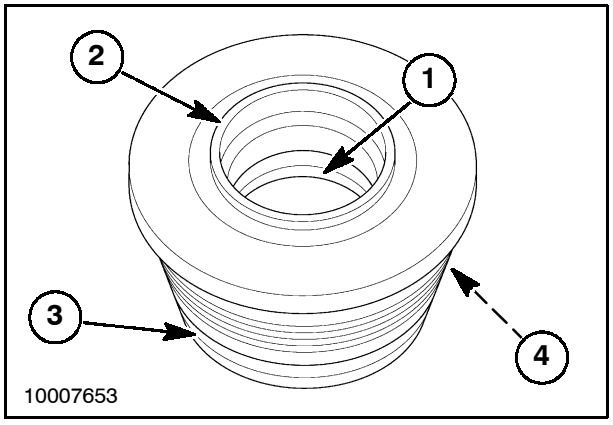
Cylinder Assembly

NOTE: *The seals can be soaked in hot water, approximately 85 °C (180 °F), for about 10 minutes to permit easier installation. Rubber O rings will not need to be softened.*

1. Insert the inside seal, 1, of the gland with the wiper portion directed toward the barrel end of the gland. Insert the outside seal, 2, of the gland with the wiper portion directed toward the rod end of the gland.
2. Install the O rings, 3 and 4, on the outside of the gland. The O rings are different diameters and will only properly fit in one position.



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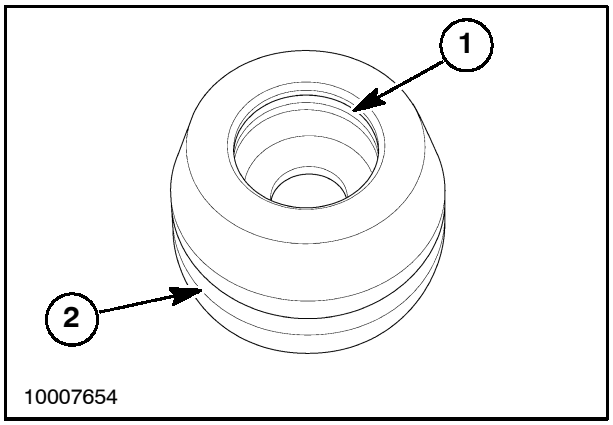
3. Insert the inside piston O ring, 1.

NOTE: *The piston ring can be soaked in hot water, approximately 85 °C (180 °F), for about 10 minutes to permit easier installation. The rubber O ring will not need to be softened.*

4. Install the piston seal ring, 2.



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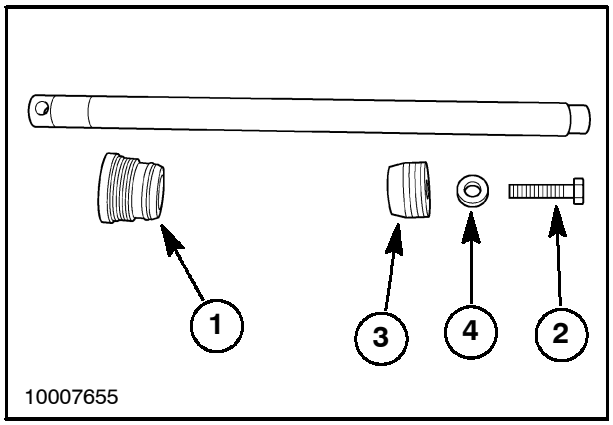
NOTE: *The cylinder gland, 1, should be slid over the piston end of the rod.*

5. Apply a light coating of hydraulic oil to the piston rod. Slide the cylinder gland, 1, onto the rod in the orientation shown.
6. Apply Loctite 242 to the clean threads of the cap screw, 2.
7. Set the piston, 3, into position on the end of the rod. Secure the piston in place using a flat washer, 4, and cap screw, 2.



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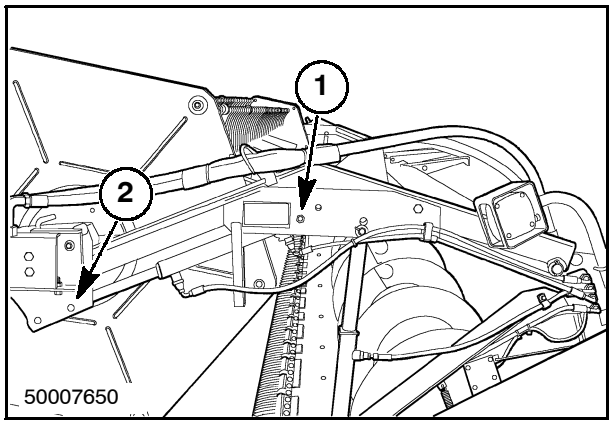
Cylinder Installation

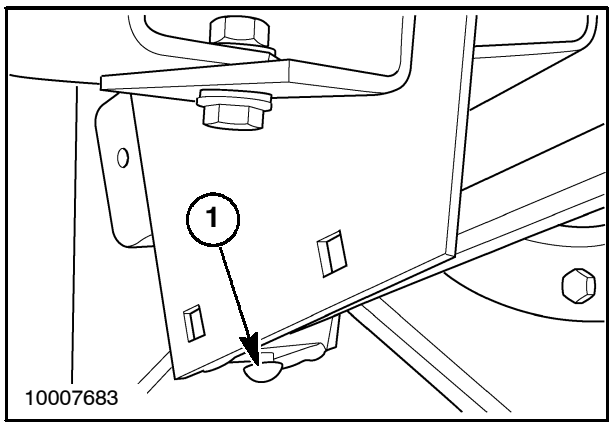
NOTE: *The cylinders are two different sizes. The large diameter cylinder is for the left side, and the small diameter cylinder is for the right.*

1. Set the barrel end of the cylinder into position at the rear hole and secure it in place with a clevis bolt and lock nut, 1. Only tighten the lock nut enough to take up the slack in the bolt.
2. Set the piston end of the cylinder into position at the front hole and secure it in place with a clevis bolt and lock nut, 2. Only tighten the lock nut enough to take up the slack in the bolt.



9

NOTE: *On rigid grain heads, the fore/aft cylinders are connected to the reel with a round pin, 1.*



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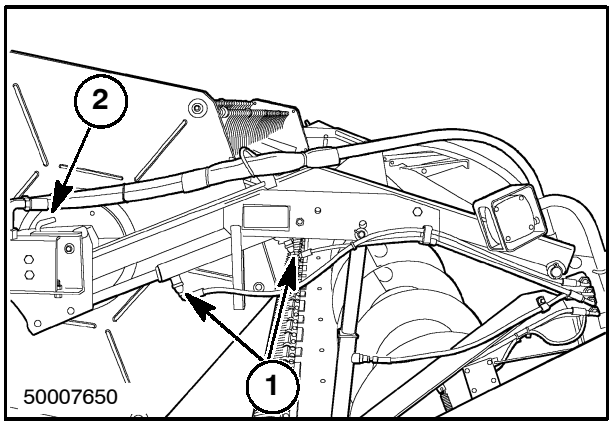
3. Attach the hydraulic hoses, 1, to the cylinder.
4. Connect the head hydraulic system to the combine. Start the combine engine.
5. Pull up the reel lock pins, 2, and rotate them 90° to unlock the reel.
6. Push and hold the reel position rocker switch to retract the cylinders for five seconds. Release the rocker switch. Run the engine for fifteen seconds. Repeat this step four times.
7. Push and hold the reel position rocker switch to extend the cylinders for five seconds. Release the rocker switch. Run the engine for fifteen seconds.
8. Push and hold the reel position rocker switch to retract the cylinders for five seconds. Release the rocker switch. Run the engine for fifteen seconds. Repeat steps 7 and 8 four times.
9. Set the reel to the desired position.



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